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EX PARTE OR LATE FILED

PACIFIC TELESIS
Group-Washington

March 10, 1995

EX PARTE

William F. Caton
Acting Secretary
Federal Communications Commission
Mail Stop 1170
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Dear Mr. Caton:

Re: GN Docket No. 90-314, Personal Communications Services; ET Docket No. 92-9, Redevelopment of Spectrum to Encourage Innovation

Today, I met with David A. Siddall, Legal Advisor to Commissioner Susan Ness to discuss issues outlined in the attached summary. Please associate this material with this proceeding.

We are submitting two copies of this notice in accordance with Section 1.1206(a)(1) of the Commission's Rules.

Please stamp and return the provided copy to confirm your receipt. Please contact me should you have any questions or require additional information concerning this matter.

Sincerely,

Attachment

cc: David A. Siddall

PCS and Microwave Relocation

Cost Sharing, Voluntary Negotiation Start Date, and International Coordination

March 6, 1995

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- PCS will be a tougher business to enter and compete in than most people realize:
  - More Sites Required than Cellular
  - Entering Established Markets
  - Higher Initial Costs before Reaching Market
  - More Competition for Site Locations
  - Microwave Relocation Issues

Microwave Relocation is an Issue that Affects all PCS Providers

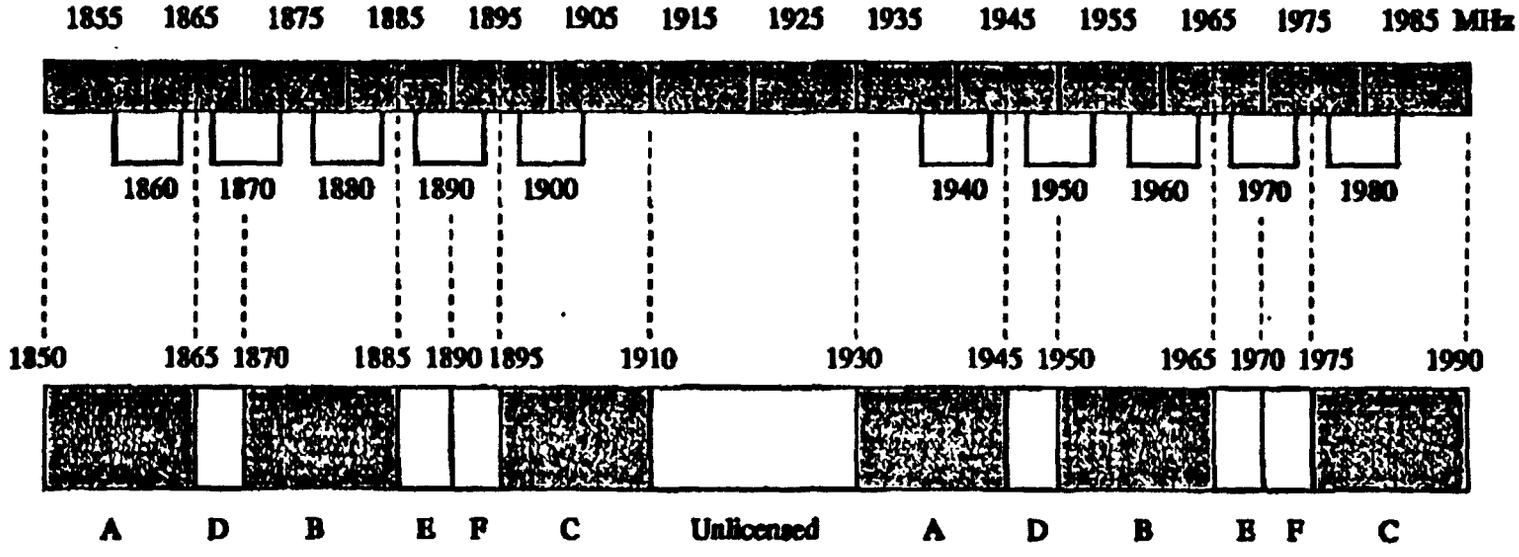
- All PCS providers will have to face the issue of which microwave links must be relocated before offering competitive wireless services. However, the timing will depend on the when all the PCS auctions are completed.
- PCS providers that want to provide wireless services as soon as possible will have to relocate existing microwave users that are not in their spectrum block to avoid causing harmful interference.
- Free-riders will have a substantial cost advantage over the early providers, unless appropriate cost sharing can be implemented.

A Single Microwave Link Can Affect Multiple PCS Blocks

- Existing Microwave Channel Plan and PCS Channel Blocks Causes a Number of Overlaps Based on Transmitted Frequency. For example, an 1865 MHz receiver would affects both the A and D blocks.
- Not All Incumbent Microwave Links Follow the Standard 80 MHz Separation between Transmit and Receive Frequencies. A link operating at 1870/1970 MHz could be characterized as affecting B, D, E and F PCS Blocks.
- Microwave Receivers receive interference from much wider bandwidths than the nominal transmitter channel bandwidth. This leads to harmful interference outside of the PCS Block.

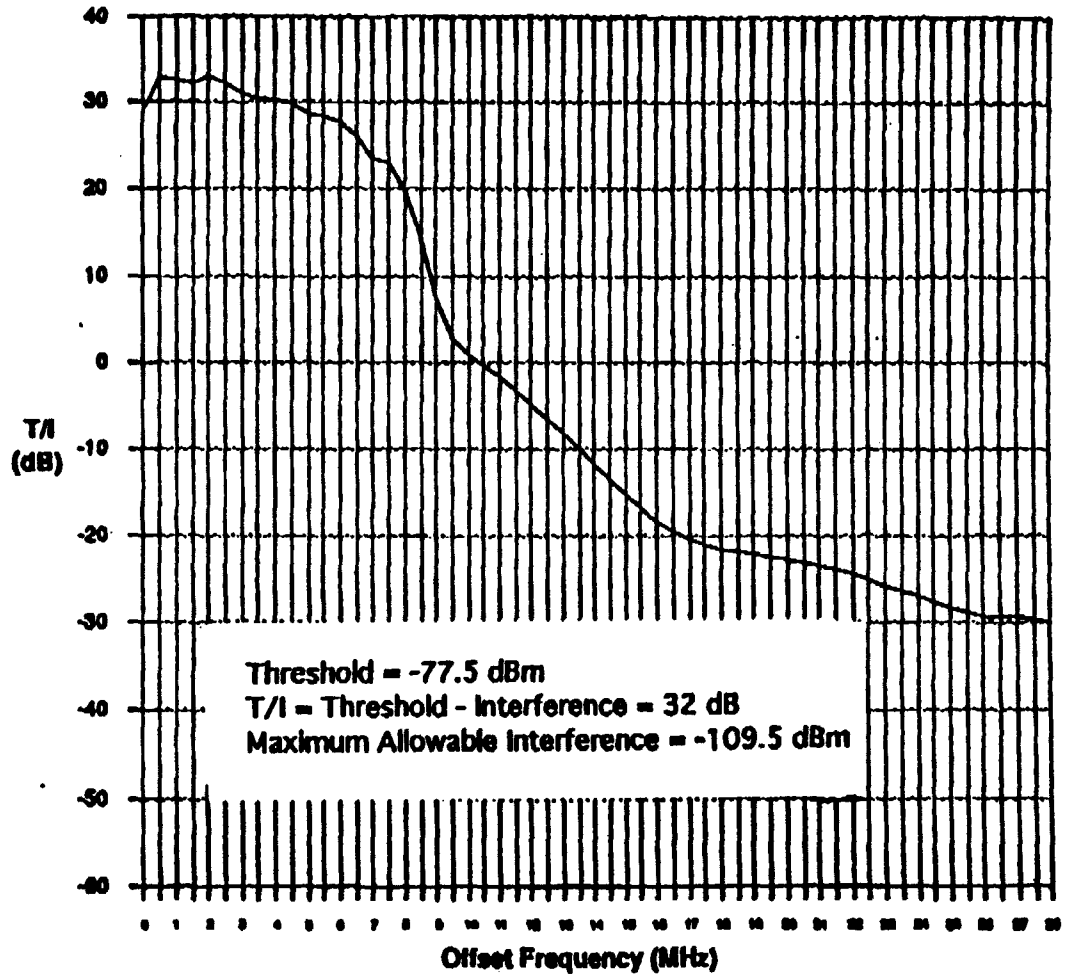
Existing Microwave Channel Plan and PCS Channel Plan

Existing Private Microwave Channel Plan



Broadband PCS Channel Band Plan

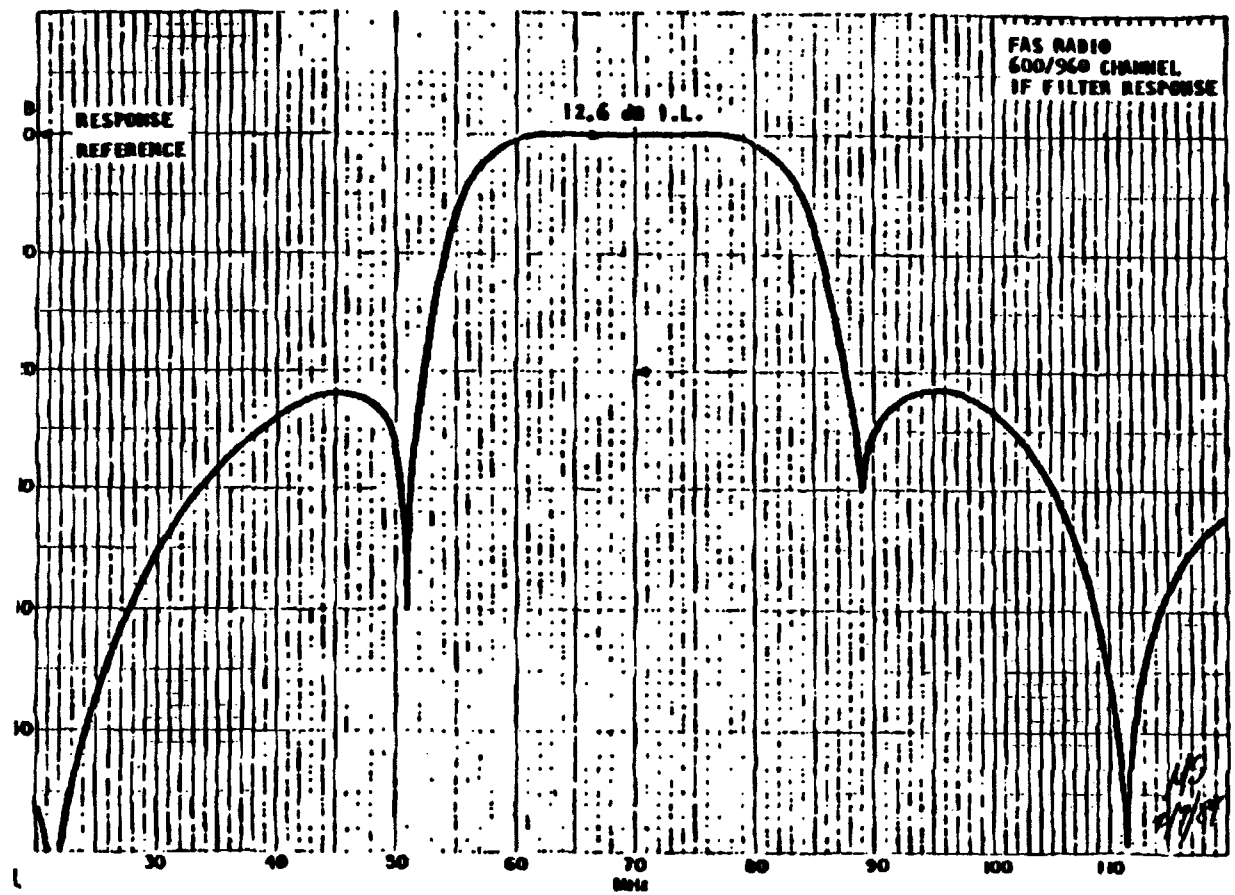
T/I Curve for a 672 Channel Digital Receiver



Interference Example for a 672 Channel Digital Receiver

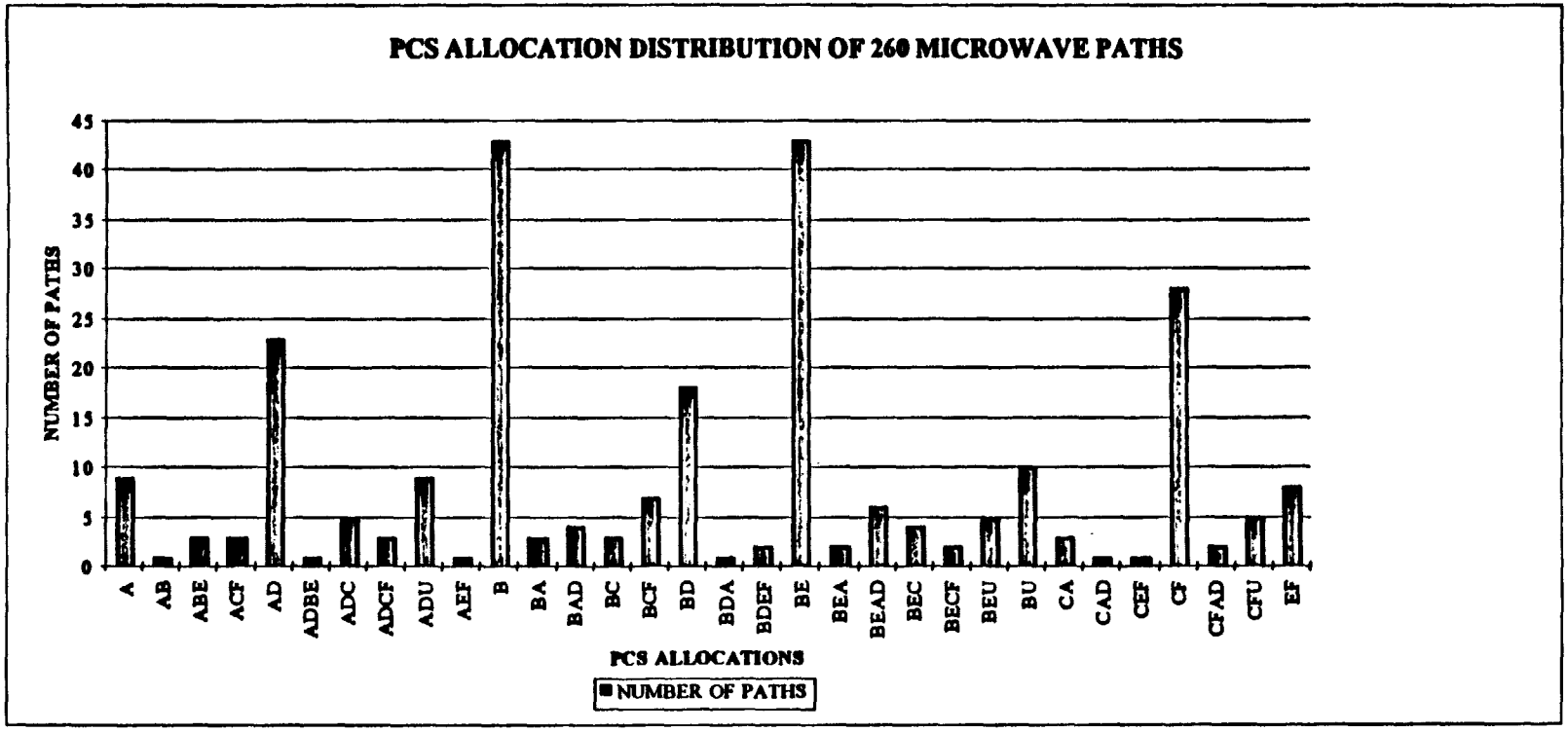
- 10 MHz away, a single mobile station transmitting 0.25 mW can cause interference from 1 mile away along the main beam of the microwave antenna.
  - » Threshold = -77 dBm, T/I @ 10 MHz = 0, Antenna Gain = 32 dBi
  - » $P_r = P_t + G_t + G_r$ - Path Loss
  - » Max. Allowable interference = (-77 - 32) = - 109 dBm
  - » Path Loss from 1 mile away = 103 dBm
  - » Mobile Transmit Power = (-109 + 103) = -6 dBm = 0.25 mW

IF Filter Response for a 600 Channel Analog Microwave Receiver



PCS Block Distribution of 260 Microwave Links in California

- 160 Links Involve the B Block, 100 Links are not in the B Block



Microwave Relocations Involve Substantial Costs

- Estimated per Link Relocation Costs vary between $200,000 and $ 300,000 each. Actual Costs will vary, does not include installation.

Sample Microwave Relocation Costs:

- Analog Radio Lo: 2 x $ 27,852 = $ 55,704
- Analog Radio Hi: 2 x $ 30,492 = $ 60,984
- Digital Radio Lo: 2 x $ 42,944 = $ 85,888
- Digital Radio Hi: 2 x $ 56,474 = $ 112,948
- Antenna Lo: 2 x $ 5000 = $ 10000
  (for paths longer than 30 miles) = 4 x $ 5000 = $ 20,000
- Antenna Hi: 2 x $ 8,000 = $ 16, 000
  (for paths longer than 30 miles) = 4 x $ 8,000 = $ 32,000
- Standard Multiplex: Analog - $ 15,000 Digital - $ 25,000
- Transmission Line: $ 21 per foot of antenna height + $ 50 connectors
  (for paths longer than 30 miles) = 2 x $ 21.24 per foot of antenna height
- Connectors: $ 900, (for paths longer than 30 miles) $ 1,800
- Twin Flex: $ 1000, (for paths longer than 30 miles) $ 2,000
- Pressure Windows: $ 100, (for paths longer than 30 miles) $ 200
- Kits: $ 500
- Dehydrator: 2 x $ 2,500 = $ 5,000
- Engineering Fees: 2 x ($1,100 Coordination + $ 300 License + $ 2,300 Survey + $ 4,000 Feasibility Study)
- Training: $ 2,000
- Test Equipment: $ 3,000
- Spare Parts: $ 5000
- DC Power Upgrade: $ 10,000 per site, expected 20% of the time = $ 2,000
- Disposal: 2 x $ 2,500 = $ 5,000 for removal and disposal of old equipment.
- Miscellaneous: 2 x $ 5,000 = $ 10,000
- Tower Upgrade: $ 150,000 per site over 30' tall, expected 20% of the time = $ 30,000 per site when needed
- Tower Inspection: $ 3,000 per site where tower exceeds 30'

Possible Microwave Relocation Cost Sharing Proposals

- $/dB - This sharing proposal would assess PCS providers cost shares based on the total amount of interference calculated at each microwave receiver from each PCS system. Difficult to resolve technical disputes, no way to incorporate measured data.
- L-TAM - Similar to the unlicensed band's UTAM, would require the creation of a single coordinator for all microwave relocations with costs distributed to the entire PCS industry based on population/MHz criteria. Large organization required, unable to respond to individual needs.
- Channel Plan Mapping with Cost Recovery - This proposal would make each PCS provider responsible for all the links within the PCS channel block. Joint microwave links will be distributed evenly.

Possible Microwave Relocation Cost Sharing Proposals - Interference Rights

- An FCC license has granted the user the right to transmit between two points and also grants the user protection from future interference. The interference rights are defined in Section 94.63 and require all future users to show that they will not cause harmful interference.
- Throughout the PCS proceedings in 92-9 and 92-314 the FCC has placed an emphasis on protecting existing microwave user's rights to operate without harmful interference.
- This cost sharing proposal would separate the transmit rights from the interference rights and allow the PCS provider who pays for the incumbent's relocation to retain the interference rights. All PCS providers would have to consider these interference rights in their analyses as if the microwave link were still active.

Possible Microwave Relocation Cost Sharing Proposals - Interference Rights: Restrictions Required

- In order to implement the interference rights based cost sharing concept a number of restrictions would be required. These include:
  - Mandatory Good Faith Negotiation
  - Maximum Value set by Microwave Relocation Cost
  - Cost Sharing Based on Benefit: $/pop cleared
  - Payment Terms: DE's could be offered financing
  - Expiration: Rights would have an expiration
  - Third Party Dispute Resolution

Benefits of Interference Rights for Cost Sharing

- The use of interference rights in the cost sharing of microwave relocation costs provides the following benefits:
  - PCS provider paying for the microwave relocation gains a "tangible" asset, the interference rights
  - Allows the early PCS providers to implement systems based solution to microwave incumbents relocation, without incurring a substantial cost disadvantage.
  - Reduces the cost advantage of free riders waiting for other providers to clear the existing microwave users.
  - Can use existing PCN process to identify other interference contributors.

Starting Dates for Voluntary Microwave Relocation Negotiations

- A number of different interpretations of the beginning of the voluntary microwave relocation negotiation period have been raised. These include:
  - October 28, 1994: Acceptance of auction applications. Unfair to microwave incumbents, no notice, 4 or 5 month retroactivity.
  - Award of License: 15 days after the end of the MTA Broadband Auction (5 days $, 10 days Long Form)
  - End of Auction
  - Acceptance of Long Form

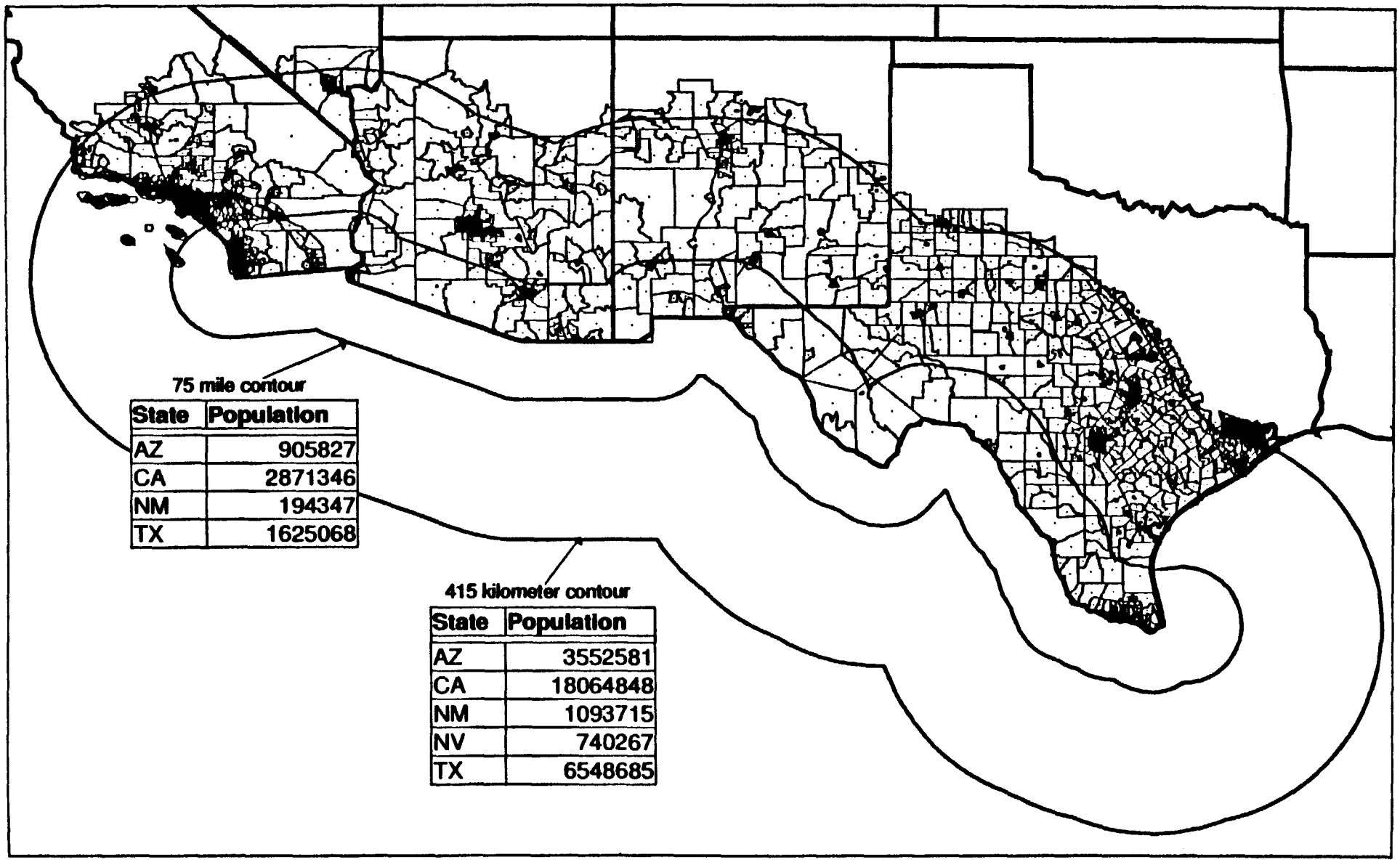
Starting Dates for Voluntary Microwave Relocation Negotiations

- Section 94.59 of the Commission's Rules states that Private Operational Fixed Microwave Service licensees will maintain primary status for a two year period after the Commission commences acceptance of applications for an emerging technology service (two-year voluntary negotiation period.) Public Safety facilities are afforded a three year voluntary negotiation period starting after the Commission commences acceptance of applications for an emerging technology service.
- The following language should be added to clarify the date on which time begins to run:
  - » **The date that establishes commencement of acceptance of applications is the date on which the long-form applications for the broadband A and B block licenses are filed. This date will apply to all incumbent microwave users in the 1850-1990 MHz band**

PCS - Microwave Coordination with Mexico

- Current PCS rules require coordination with microwave users in Mexico. However, no information appears to be available concerning the location or technical parameters concerning existing microwave users in Mexico.
- This is a serious concern throughout the southwestern US.
- US - Canada information has become available, but no progress has been reported to the south.
- The following map details the US population that is affected by the coordination with Mexico issue. The population figures show a 75 mile coordination distance and a 415 km coordination distance.
- The 75 mile contour affects 5.59 million Americans, the 415 km contour affects just over 30 million pops.

U.S. Population near U.S./Mexican Border



75 mile contour

State	Population
AZ	905827
CA	2871346
NM	194347
TX	1625068

415 kilometer contour

State	Population
AZ	3552581
CA	18064848
NM	1093715
NV	740267
TX	6548685

Data Source: U.S. Census Bureau, 1990 Census

Conclusion

- Existing microwave links will affect a wide variety of PCS blocks due to the channelization of private microwave and PCS spectrum; the technical characteristics of the microwave systems; and the type of PCS systems that are deployed.
- Microwave relocation cost sharing will reduce the penalty for coming to the market early and eliminate the cost advantage of free-riders.
- Establishing Transferable Interference Rights addresses the needs of the incumbent microwave users for coherent system solutions and the early PCS provider's needs for cost equity, while protecting later PCS entrants.
- PCS coordination with Mexico is an industry priority affecting millions of potential PCS consumers.